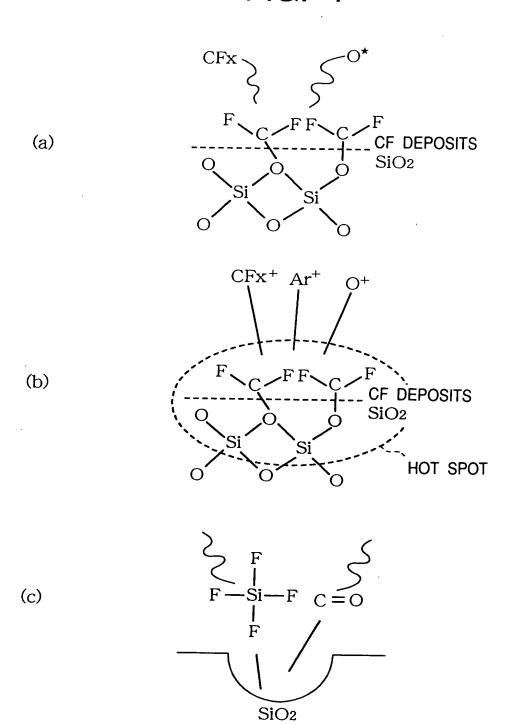
CONTRACTOR OF THE CONTRACTOR

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FIG. 1



(a)
$$FIG. 2$$

$$O \longrightarrow Si \longrightarrow CH3$$

(c) O
$$\longrightarrow$$
 ATTRACTION \longrightarrow H \longrightarrow O \longrightarrow O \longrightarrow C \longrightarrow H \bigcirc REPULSION \longrightarrow H

METASTABLE STRUCTURE

(d)
$$O \longrightarrow Si \longrightarrow O \longrightarrow C \longrightarrow H$$

$$O \longrightarrow Si \longrightarrow O \longrightarrow C \longrightarrow H$$

$$DECOMPO \longrightarrow VAPOR-$$
SITION VAPOR-

FIG. 3

FIG. 4

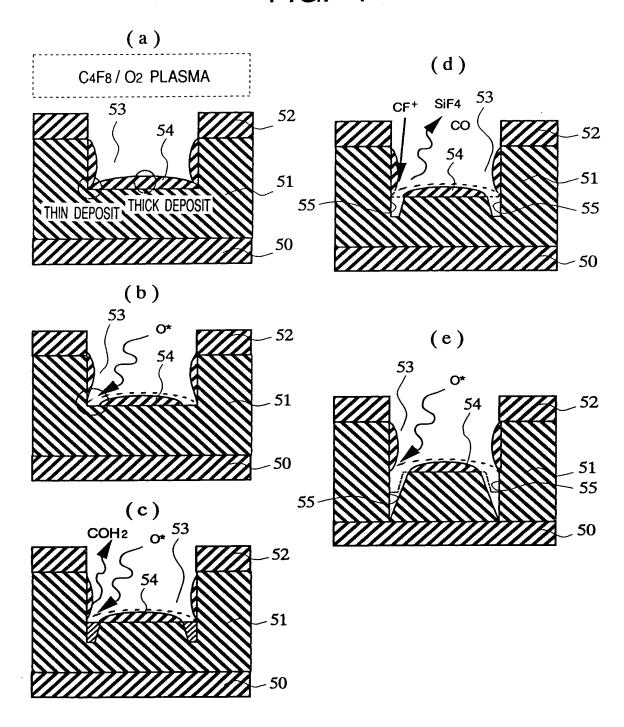
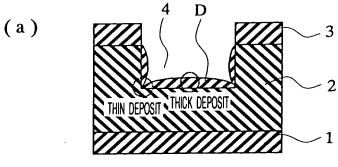
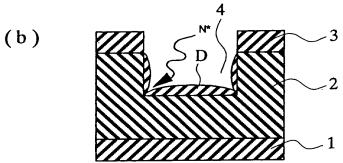
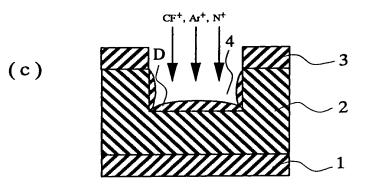


FIG. 5

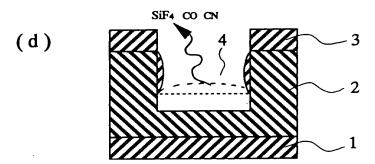
FIG. 6







- 1: INSULATING FILM
- 2: ORGANIC INSULATING FILM
- 3: PHOTORESIST FILM
- 4: RECESS



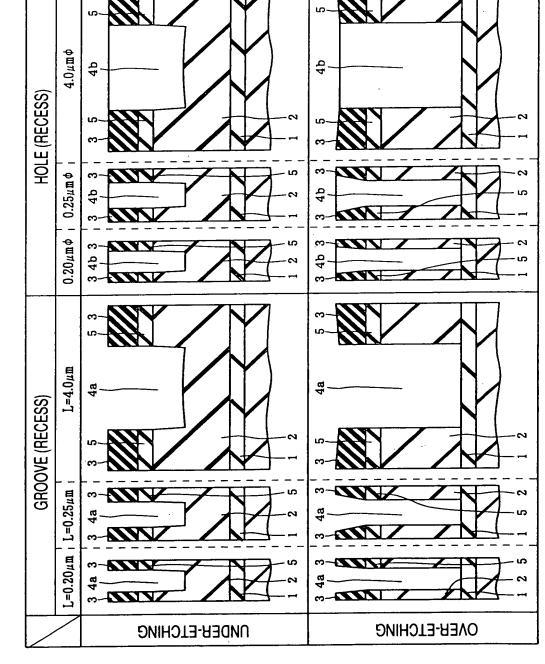
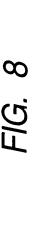


FIG. 7

in the state of the second



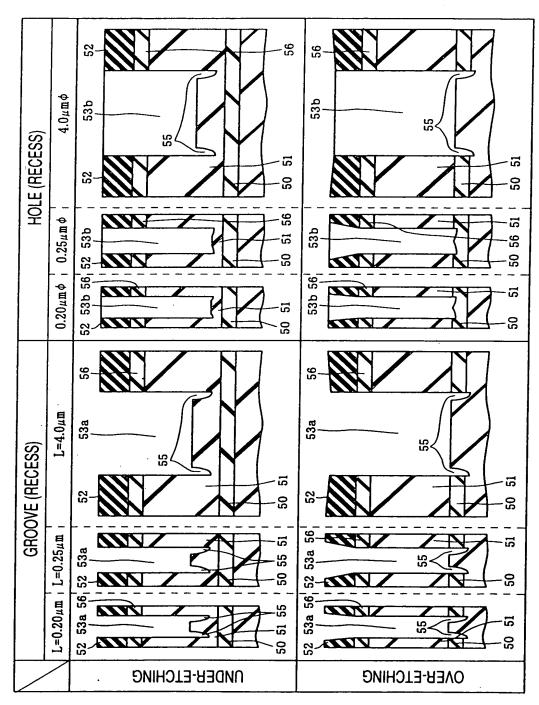
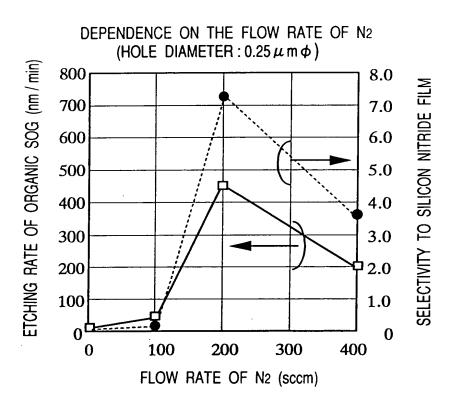


FIG. 9



- ☐ ETCHING RATE OF ORGANIC SOG (nm/min)
- SELECTIVITY TO SILICON NITRIDE FILM

F/G. 10

	CF GAS ALONE	CF GAS/O2	CF GAS/N2
ETCHING RATE	×	0	0
SELECTIVITY	×	×	0
FORM	\Box	O ×	0
ELIMINATION PROPERTY	×	0	0
SYNTHETIC EVALUATION	×		0

FIG. 11

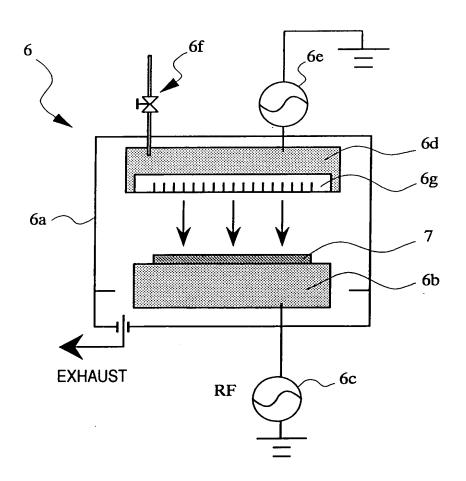
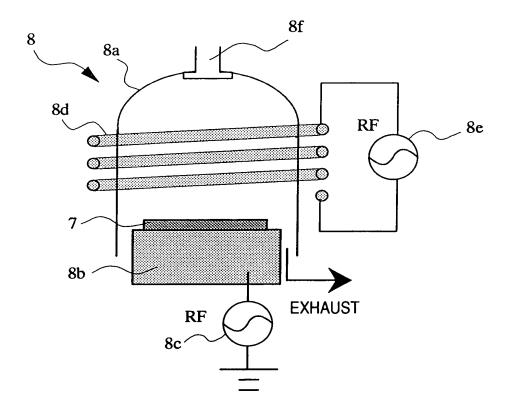
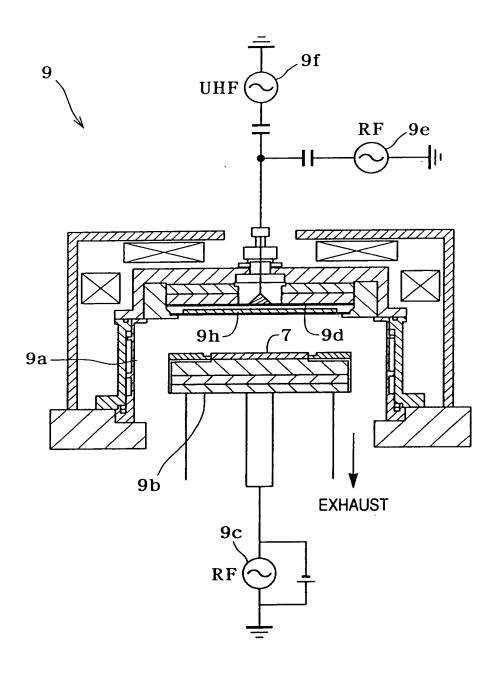


FIG. 12



· 754 Pas Calley October

FIG. 13



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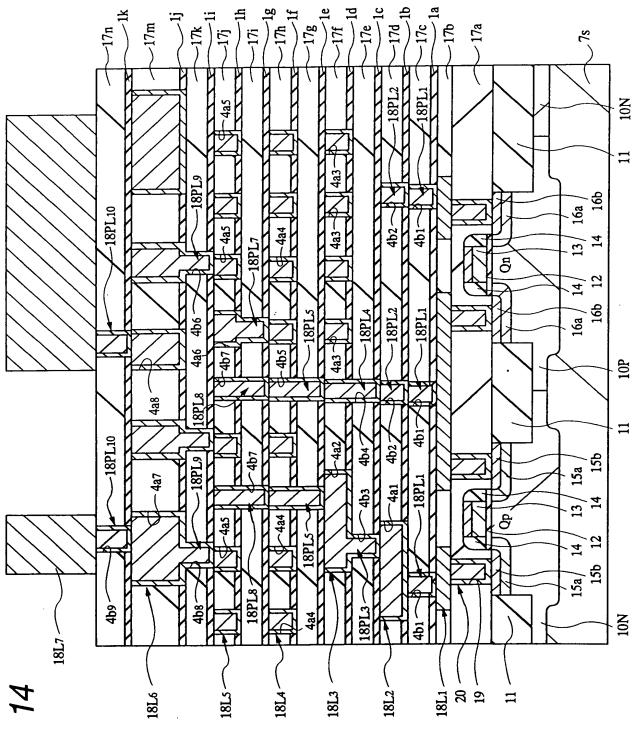


FIG. 15

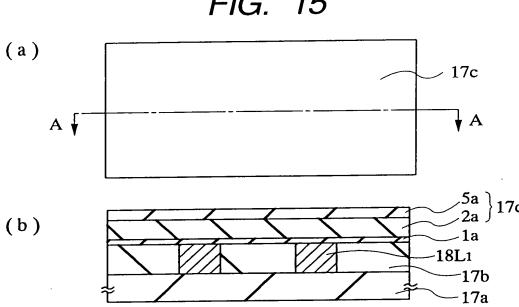
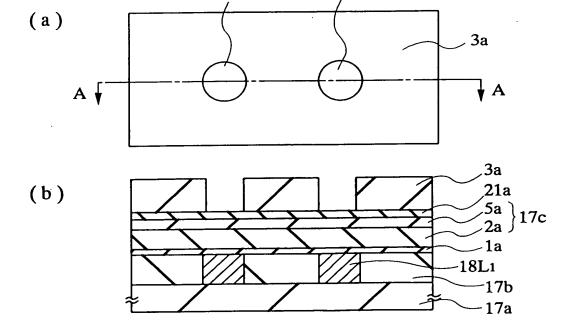
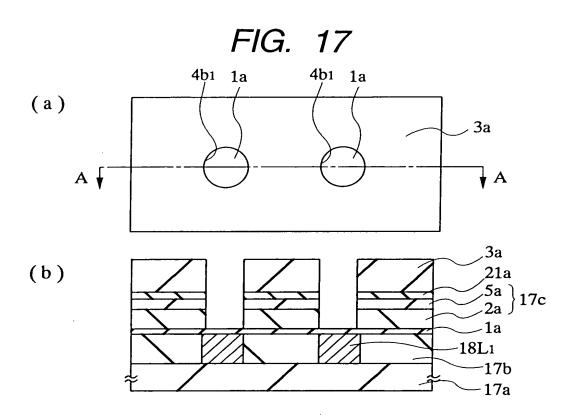


FIG. 16 21a 21a





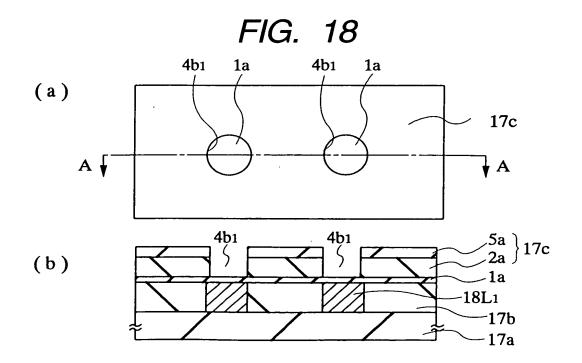
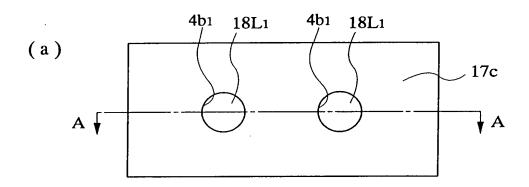
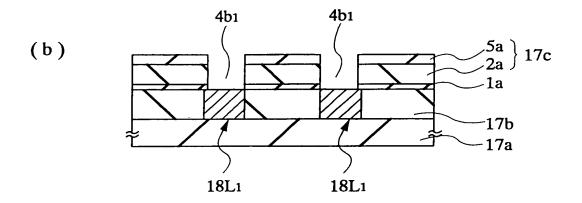


FIG. 19





The state of the state of the same of the

FIG. 20

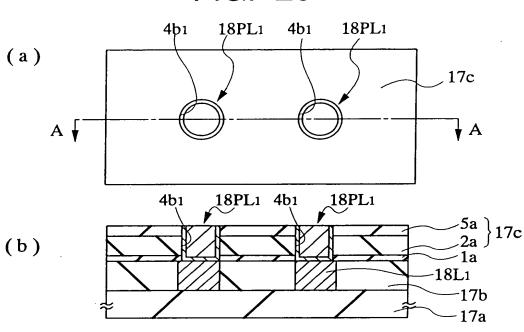


FIG. 21

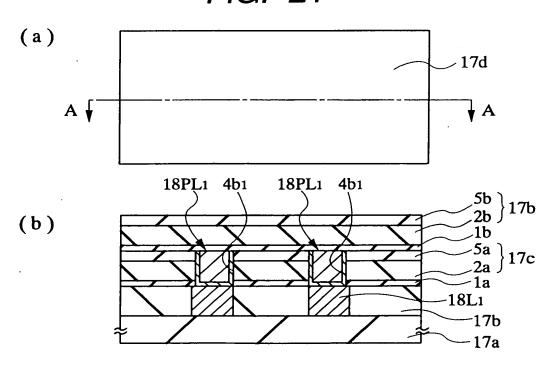
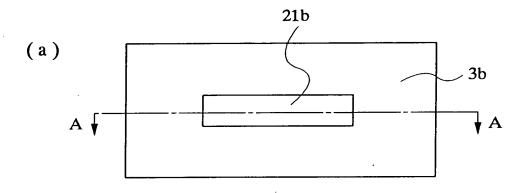


FIG. 22



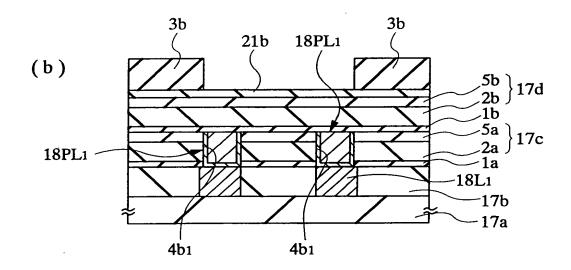
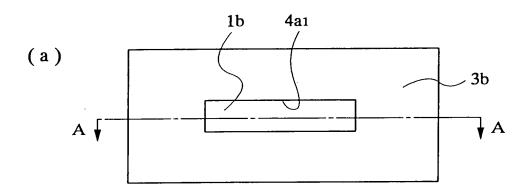


FIG. 23



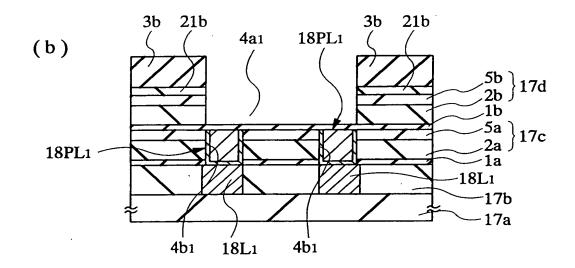
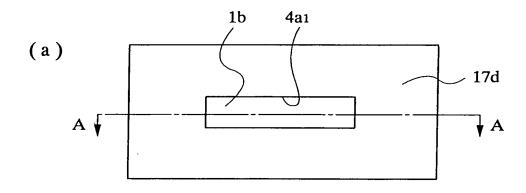


FIG. 24



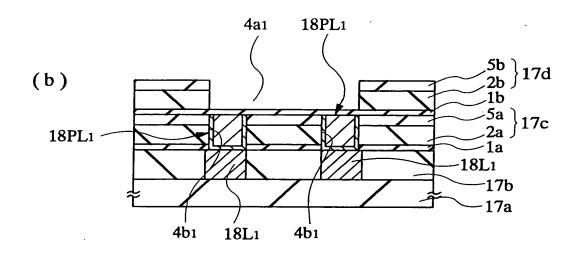
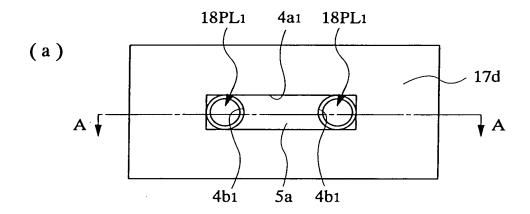
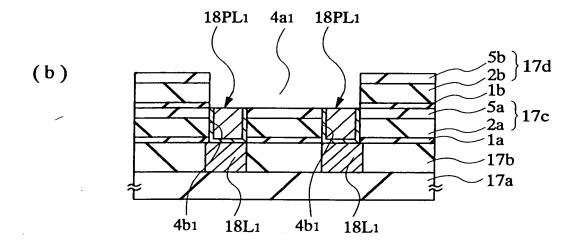


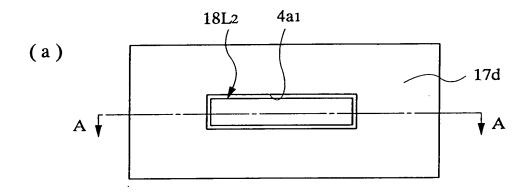
FIG. 25





TO THE RESERVE OF THE SECOND

FIG. 26



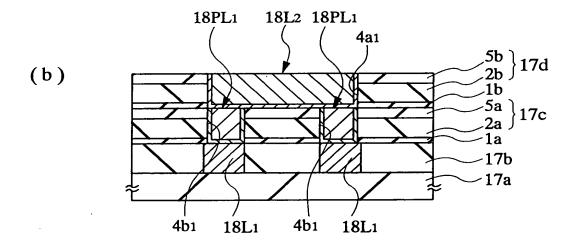


FIG. 27

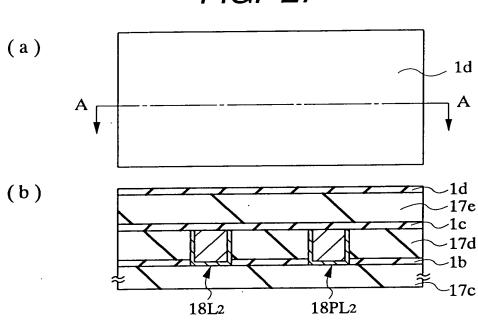


FIG. 28

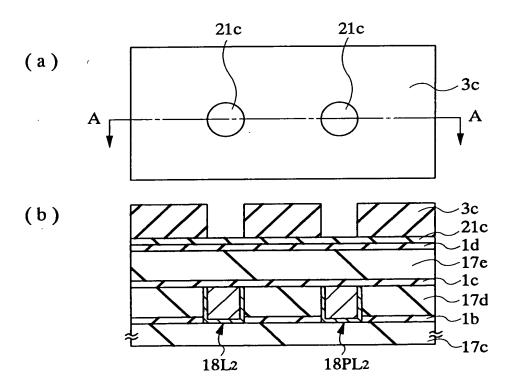


FIG. 29 4b3 17e 4b3 17e (a) Зc Α Α 4b3 4b3 3c (b) 21c 1d -17e -1c 17d ·1b -17c 18PL2 18L2

FIG. 30

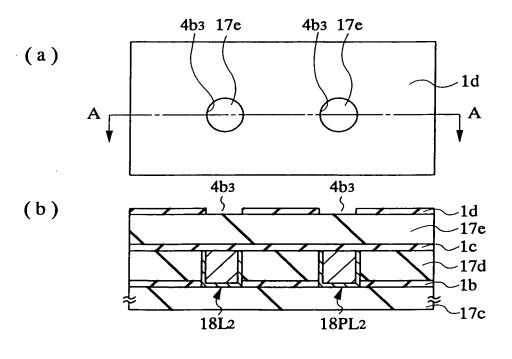
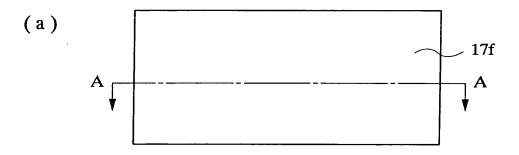


FIG. 31



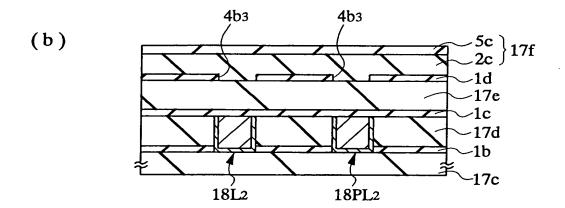
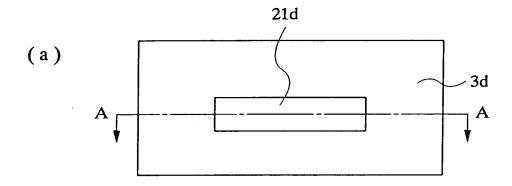


FIG. 32



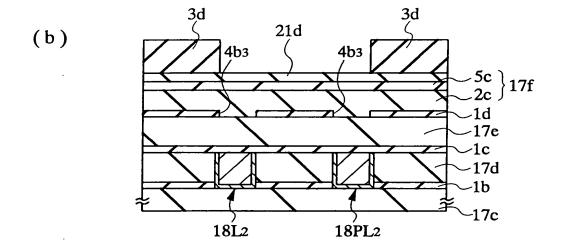
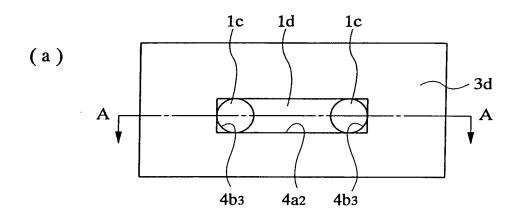


FIG. 33



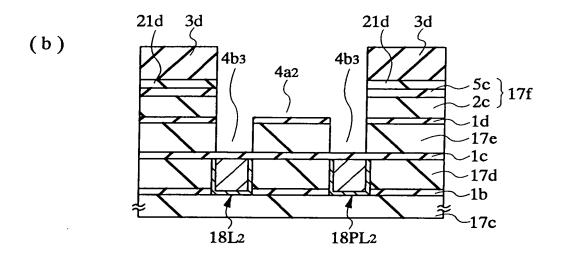
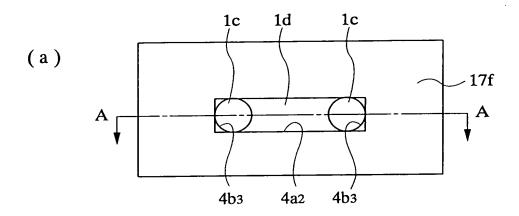


FIG. 34



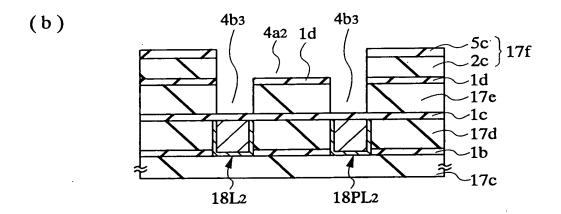
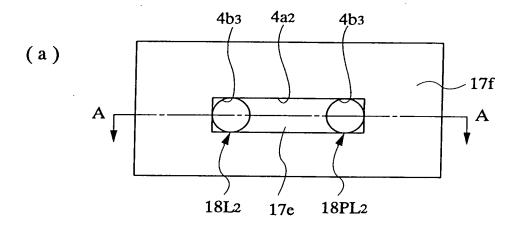


FIG. 35



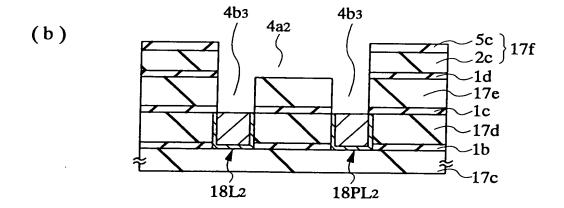
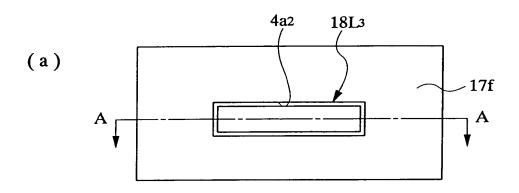


FIG. 36



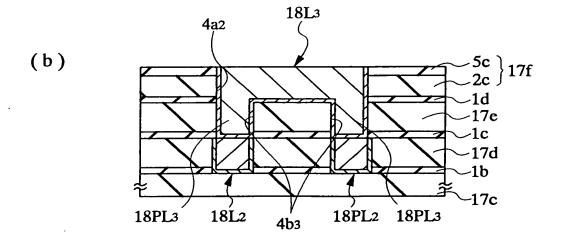


FIG. 37

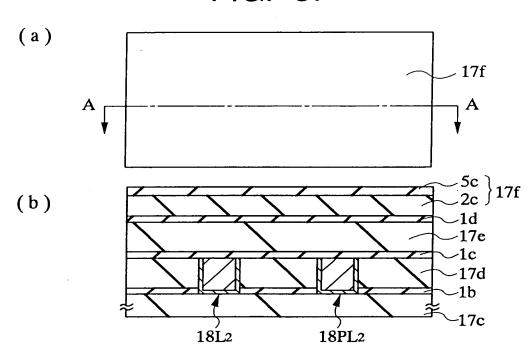


FIG. 38

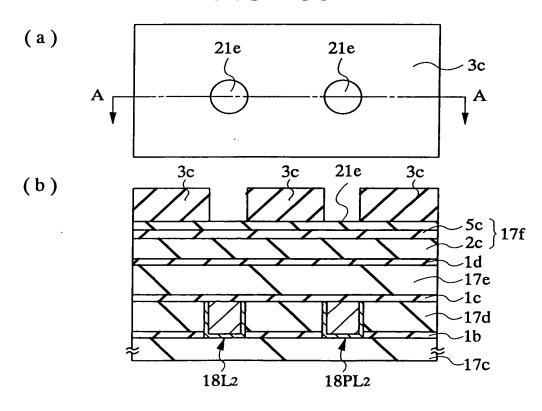
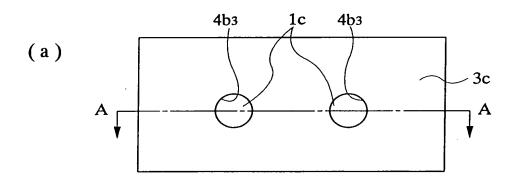


FIG. 39



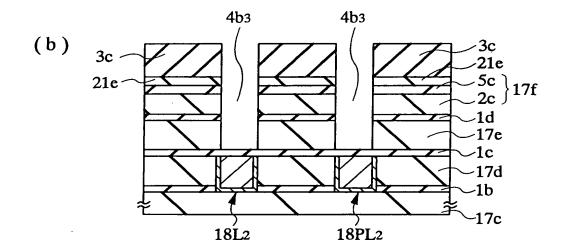
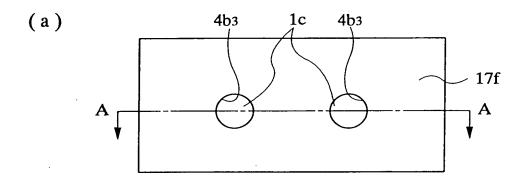


FIG. 40



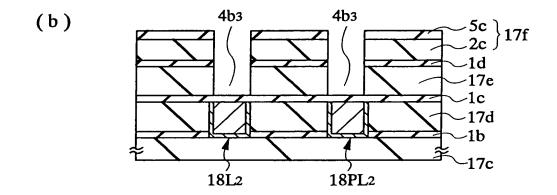
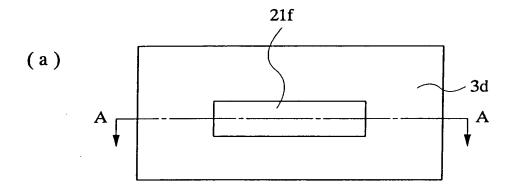


FIG. 41



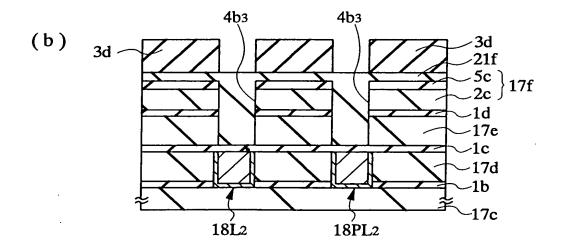
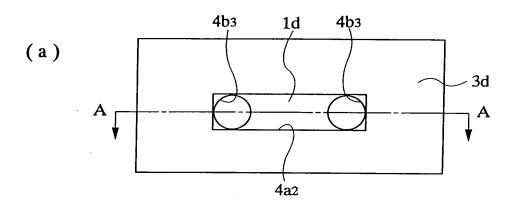


FIG. 42



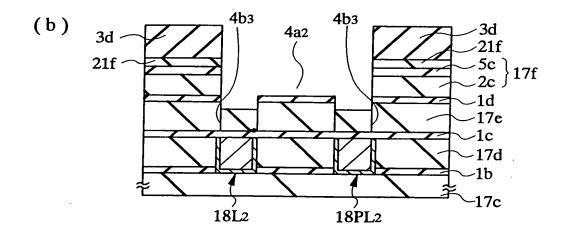
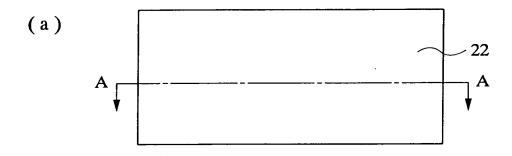


FIG. 43



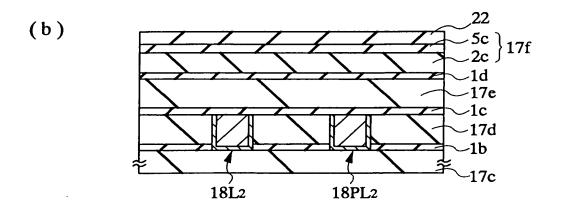
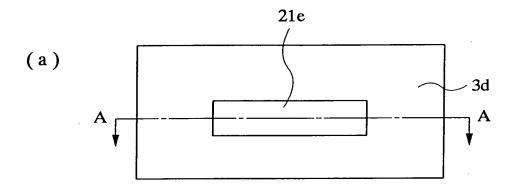


FIG. 44



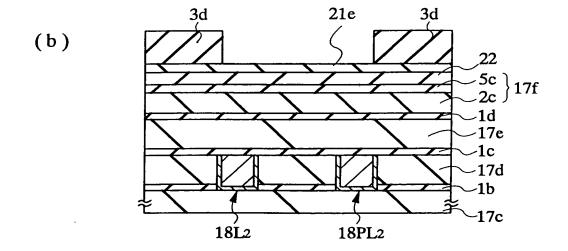
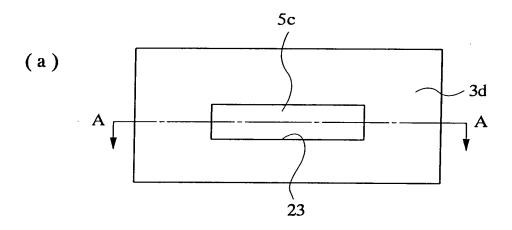


FIG. 45



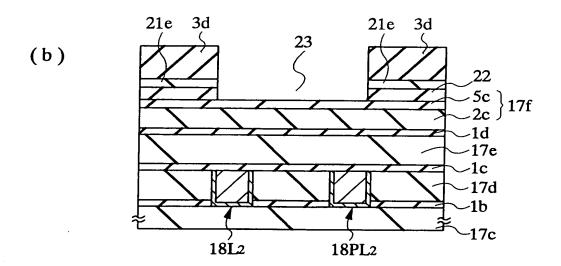
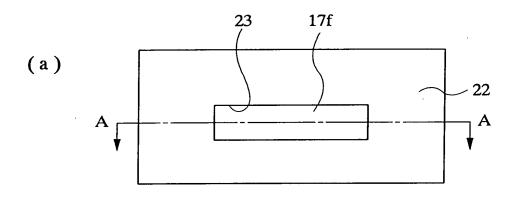


FIG. 46



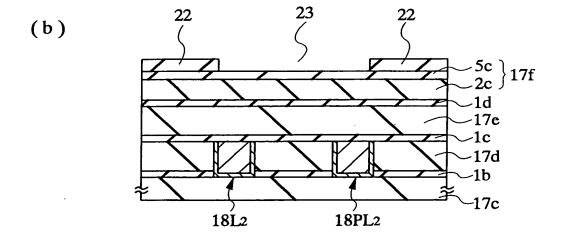
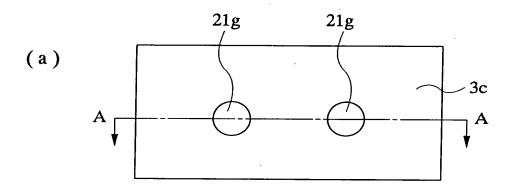


FIG. 47



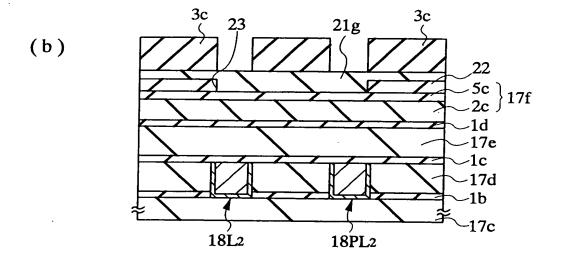
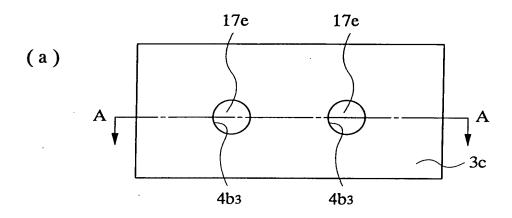


FIG. 48



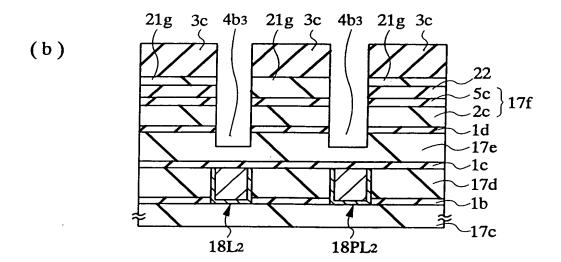
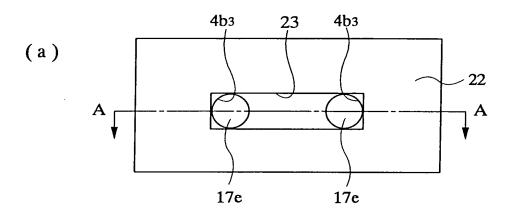


FIG. 49



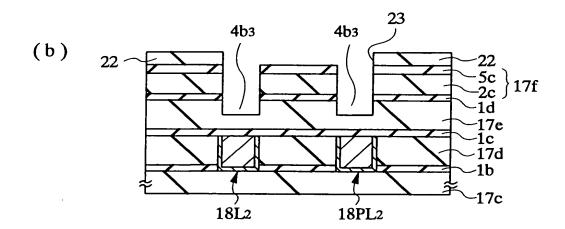
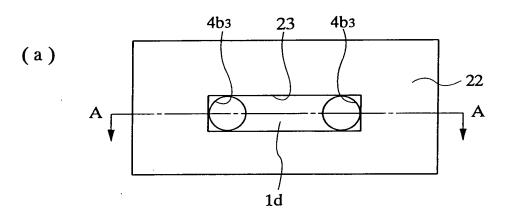


FIG. 50



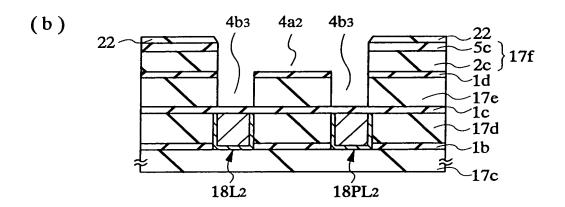


FIG. 51

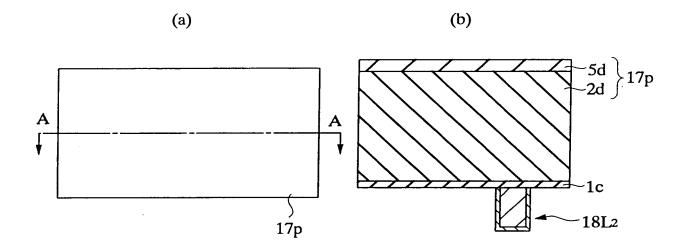


FIG. 52

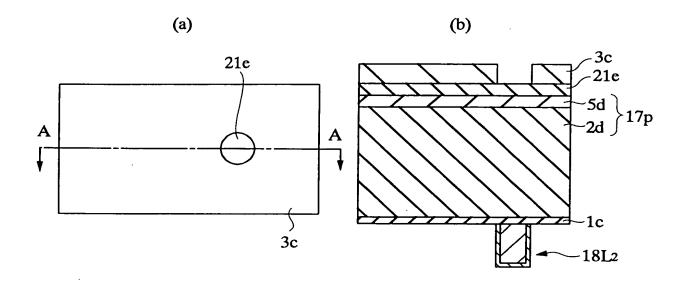


FIG. 53

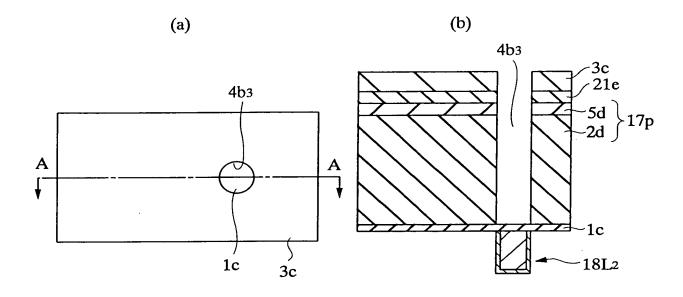


FIG. 54

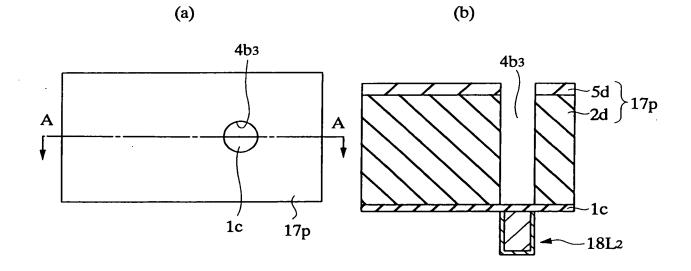


FIG. 55

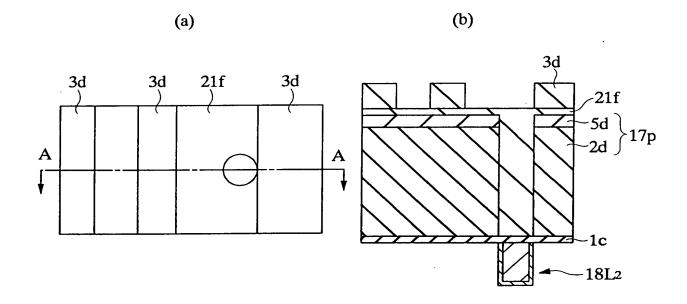


FIG. 56

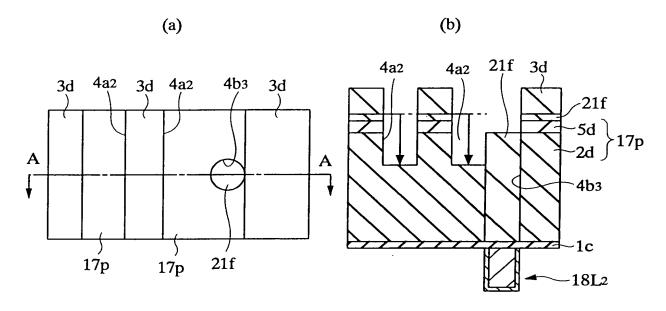


FIG. 57

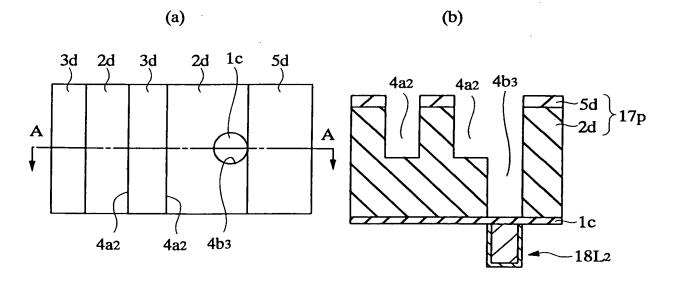


FIG. 58

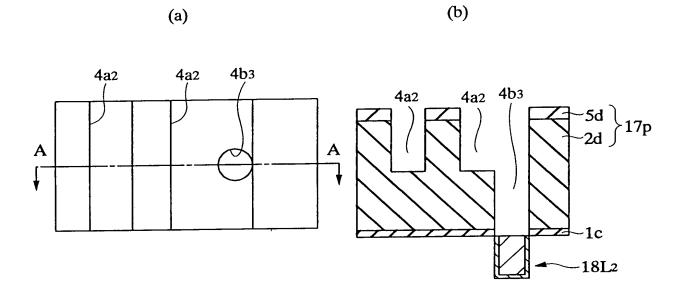


FIG. 59

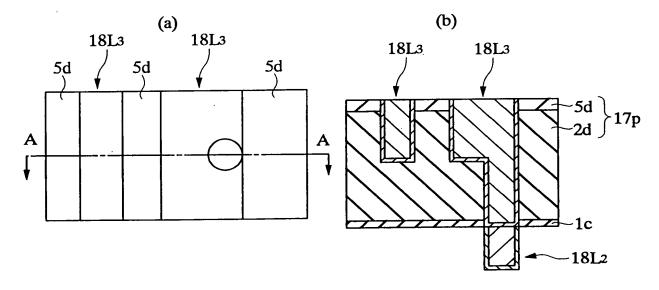
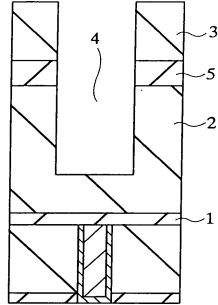


FIG. 60

	C4F8 FLOW RATE > O2 FLOW RATE	C4F8 FLOW RATE ≤ O2 FLOW RATE
SCHEMATIC CROSS- SECTIONAL VIEW	4 \	55 55
FORM	0	X (HAVING A SIDE TRENCH)
SELECTIVITY TO SIN	X (NOT GREATER THAN 2)	(NOT GREATER THAN 5)
ETCHING APPARATUS	TOKYO ELECTRON IEM	CTRON IEM
ETCHING GAS	C4F8/02/A r)2/Ar
PRESSURE	2 5 mTorr	3 0 mTorr
HIGH-FREQUENCY POWER	500/200W	2200/1400W
STAGE TEMPERATURE	− 2 0 °C	၁. 0

FIG. 61

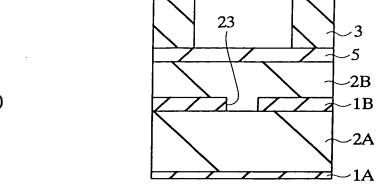


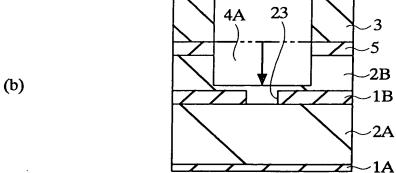
(a)

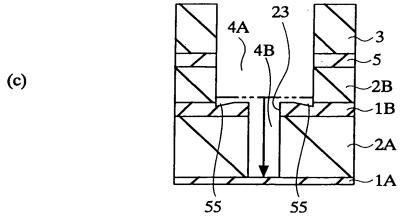
, 55 <u>5</u>5

(b)

FIG. 62







(a)

FIG. 63

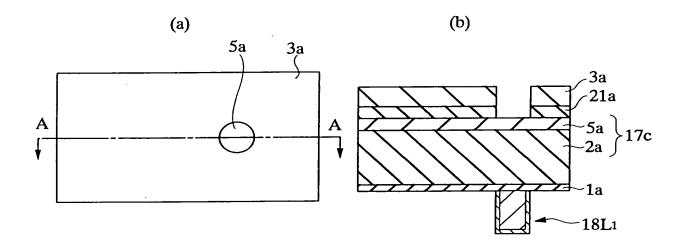


FIG. 64

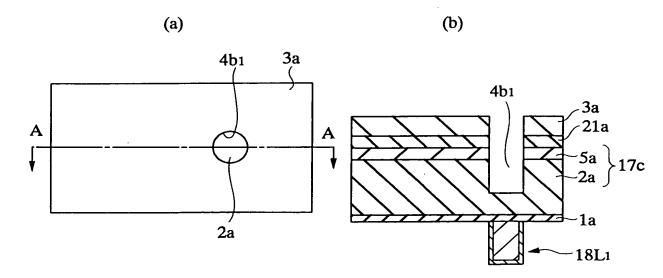


FIG. 65

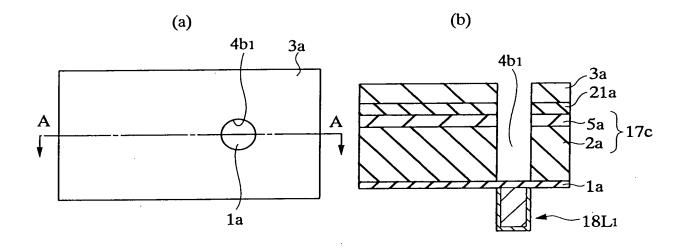


FIG. 66

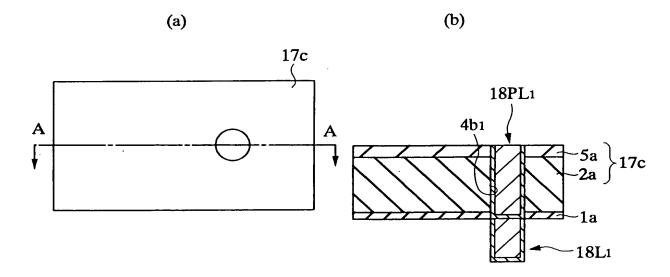


FIG. 67

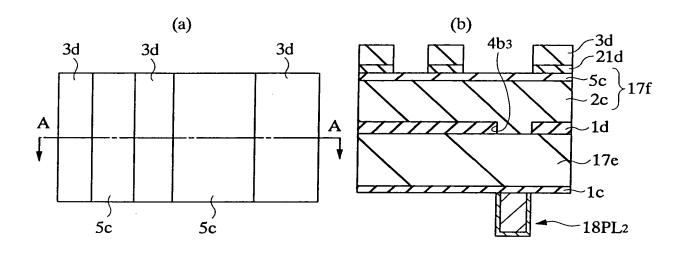


FIG. 68

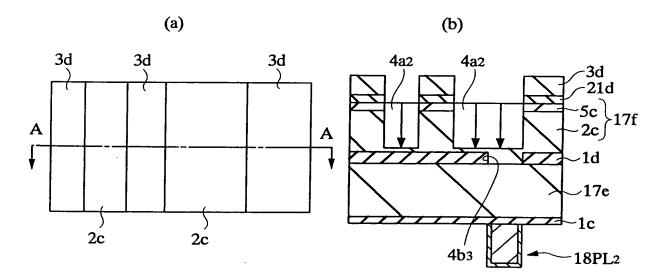


FIG. 69

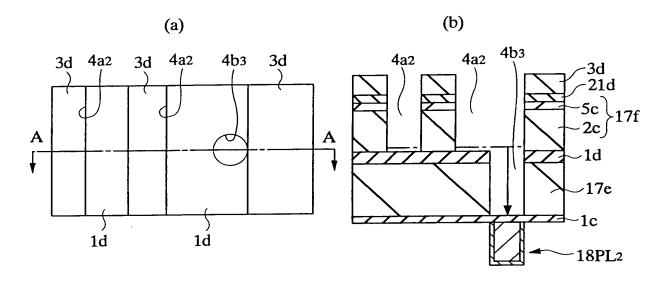


FIG. 70

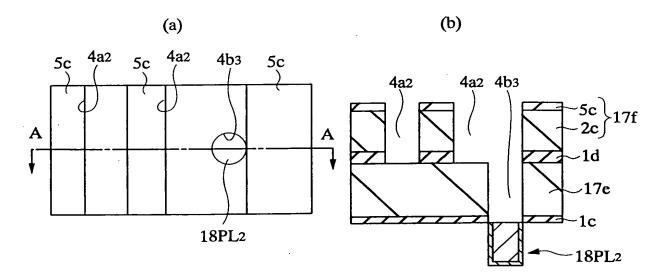


FIG. 71

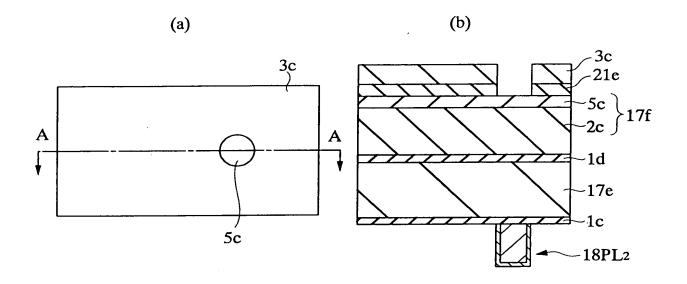


FIG. 72

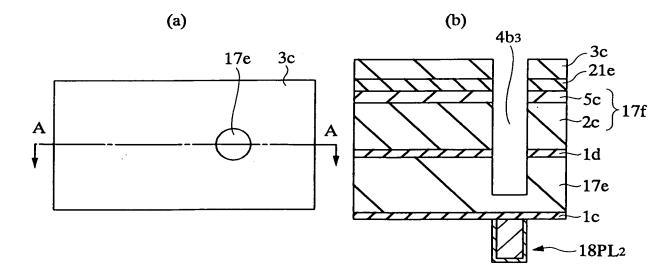


FIG. 73

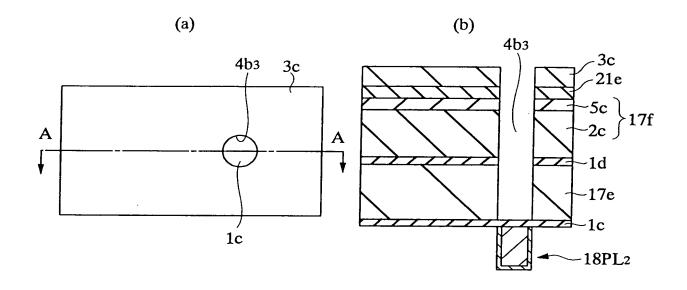


FIG. 74

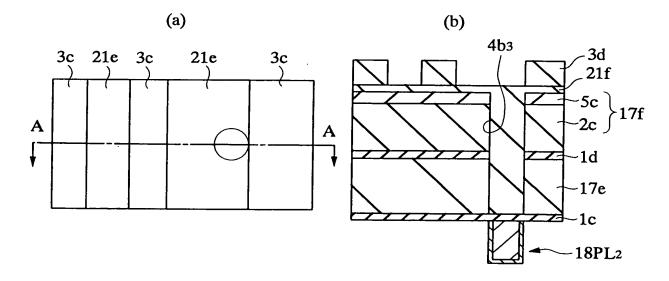


FIG. 75

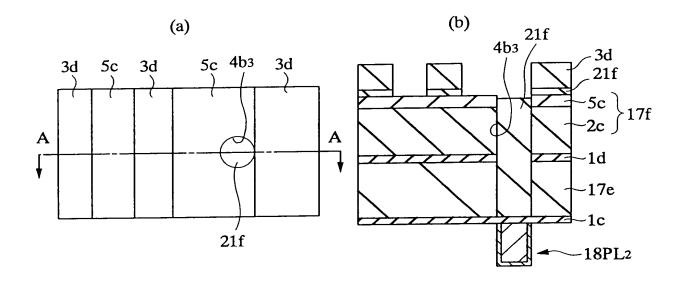


FIG. 76

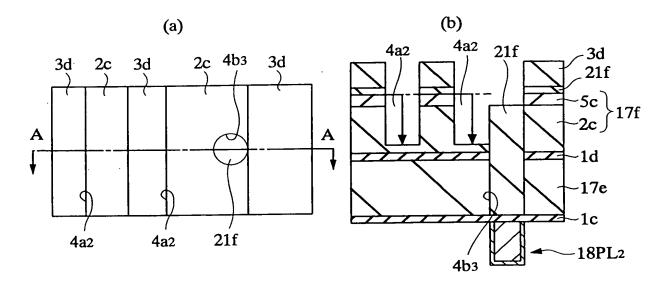


FIG. 77

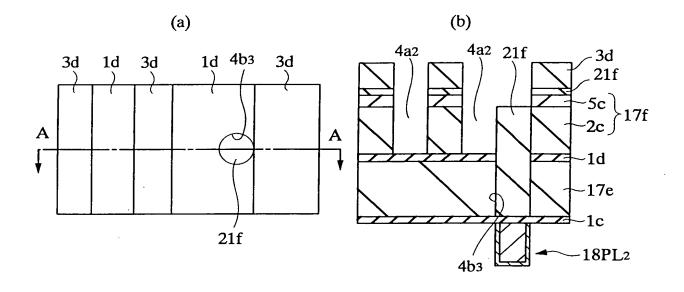


FIG. 78

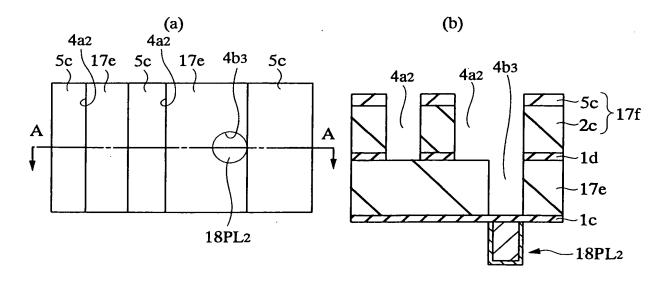


FIG. 79

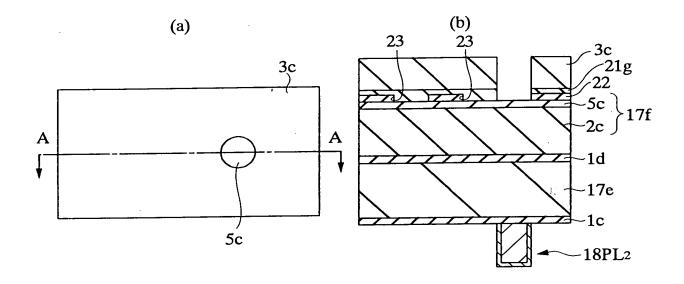


FIG. 80

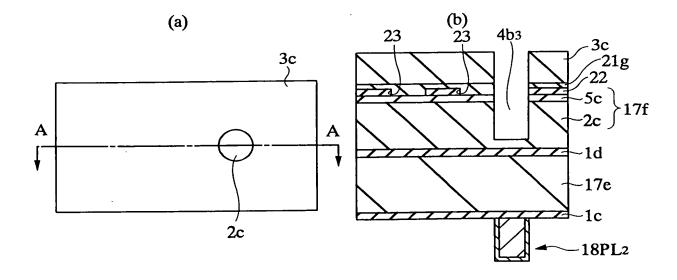


FIG. 81

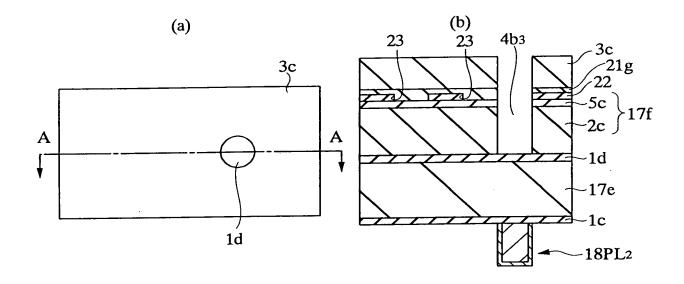


FIG. 82

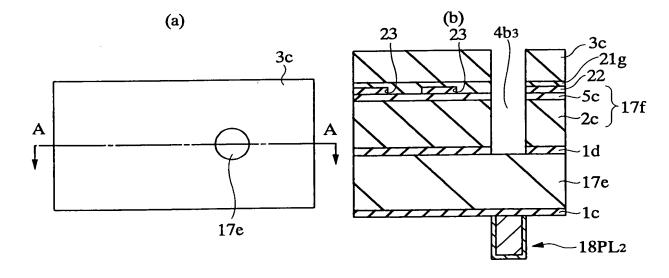


FIG. 83

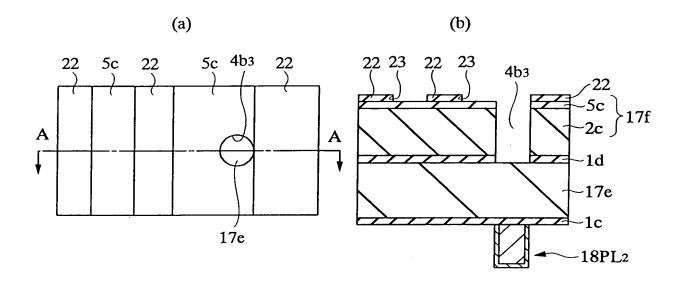


FIG. 84

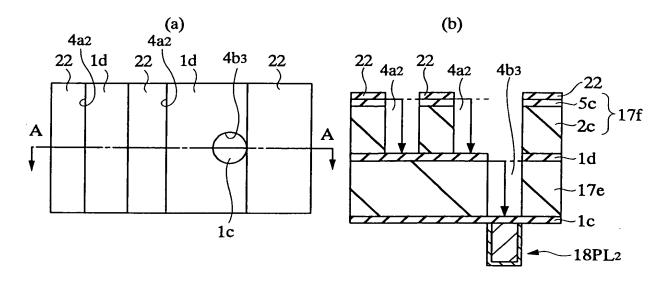


FIG. 85

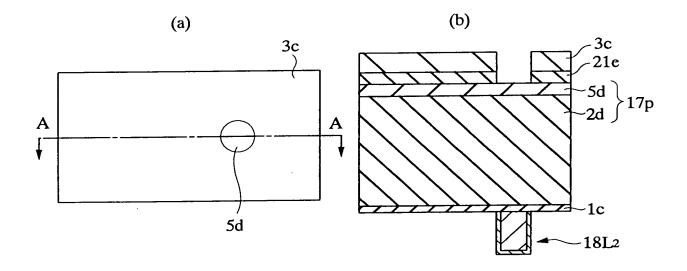


FIG. 86

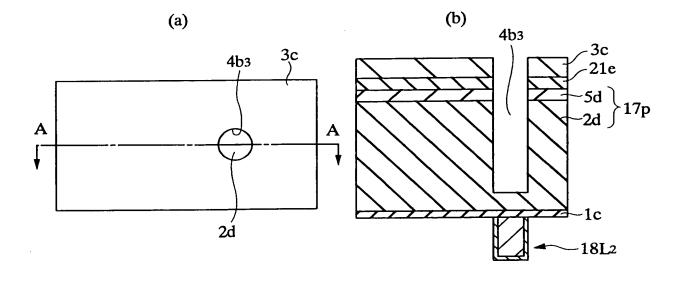


FIG. 87

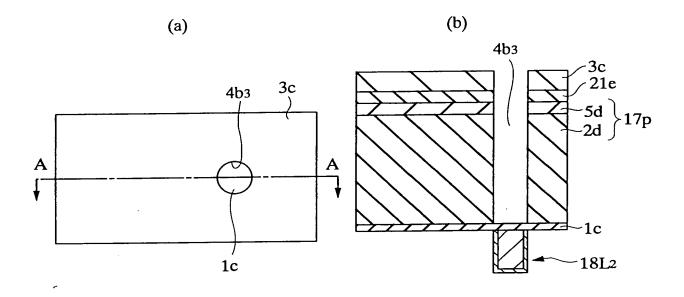


FIG. 88

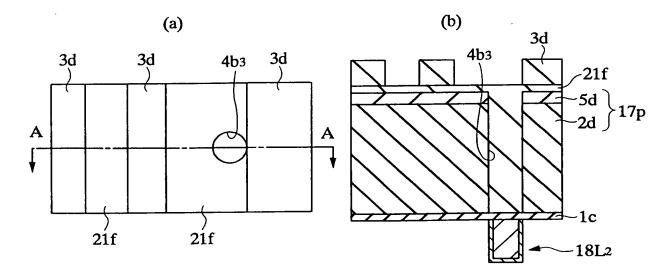


FIG. 89

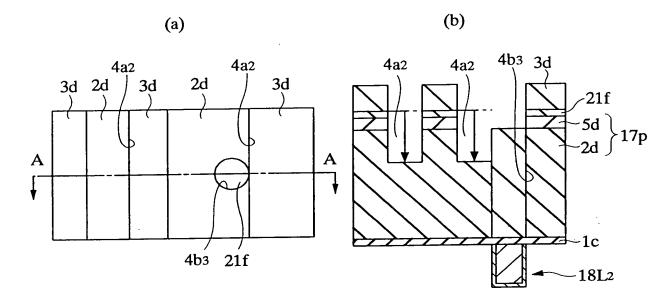


FIG. 90

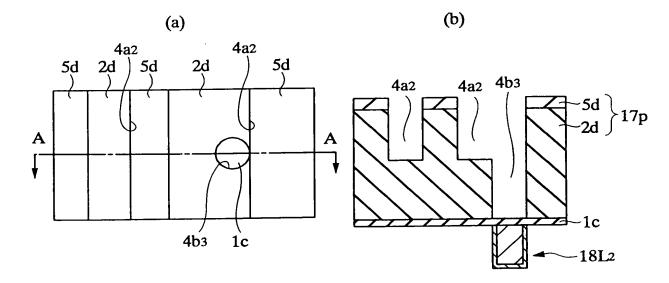
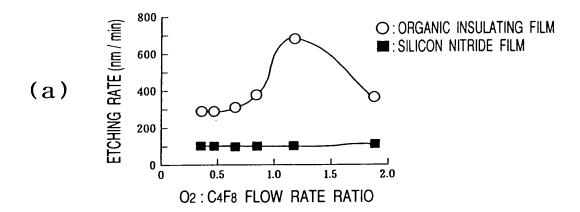


FIG. 91



	O2:C4F8 FLOW RATE RATIO	0.2	0.4	0.6	0.8	1.5
(b)	ETCHING FORM	4—————————————————————————————————————		4 C INSU- FILM	4	4

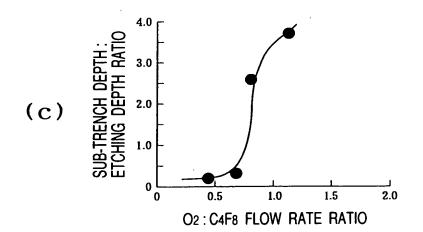
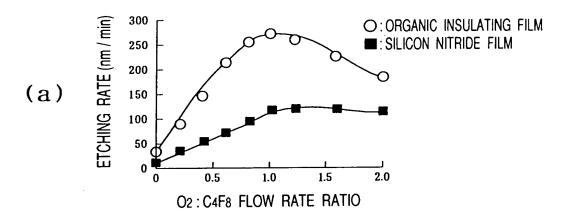


FIG. 92



	O2:C4F8 FLOW RATE RATIO	0	0.5	1.0	1.5	2.0
(b)	ETCHING FORM	TAPER ANGLE	ORGANIC			

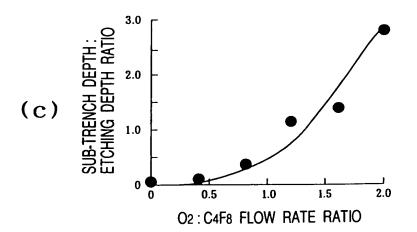


FIG. 93

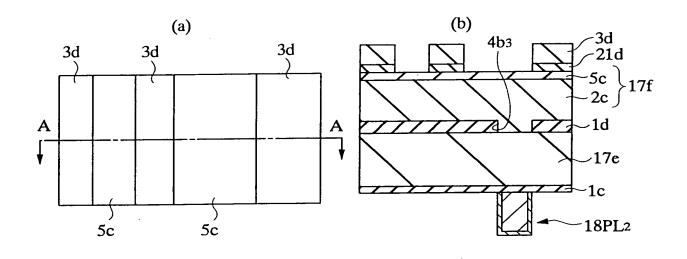


FIG. 94

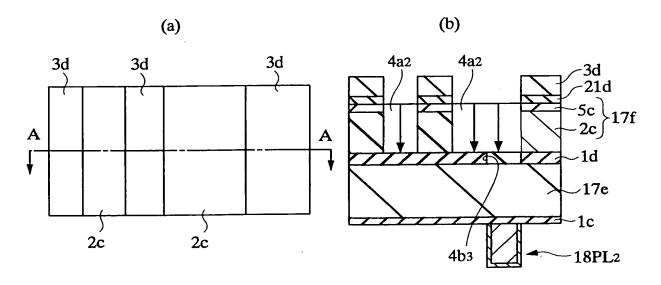


FIG. 95

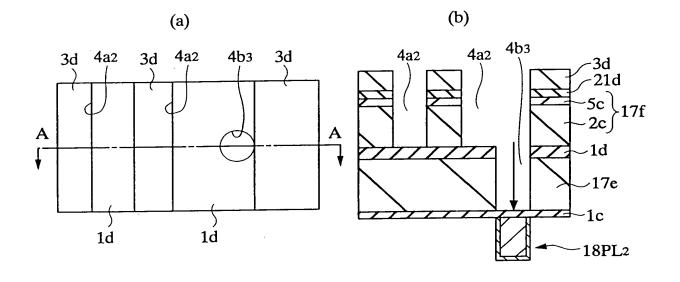


FIG. 96

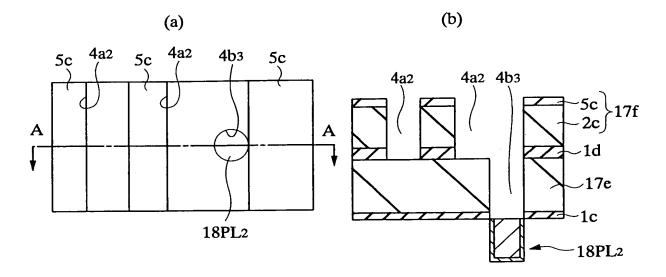


FIG. 97

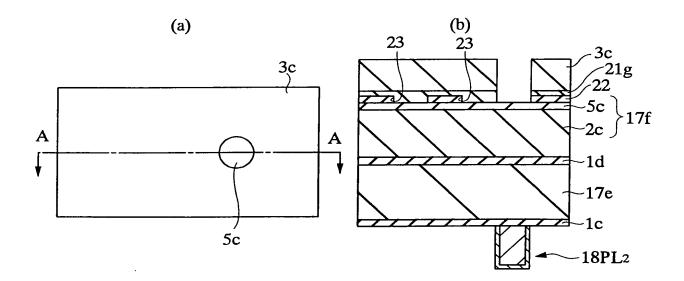


FIG. 98

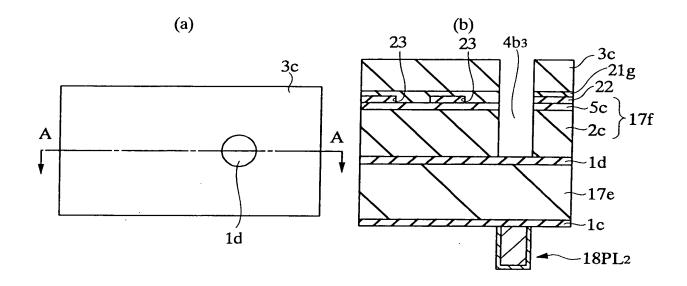


FIG. 99

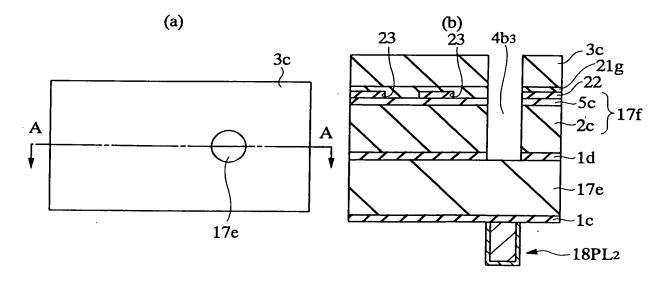


FIG. 100

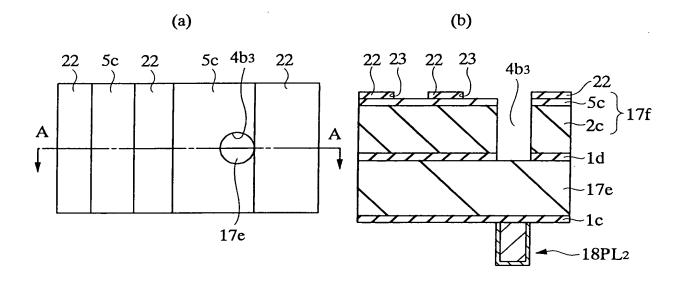


FIG. 101

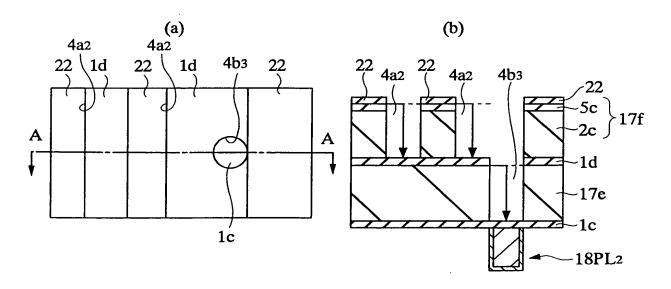


FIG. 102

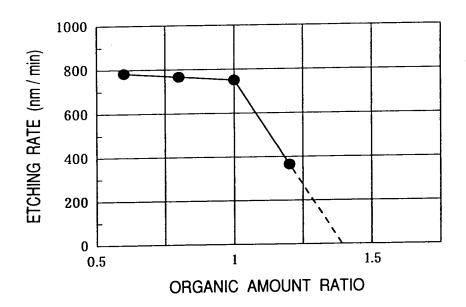
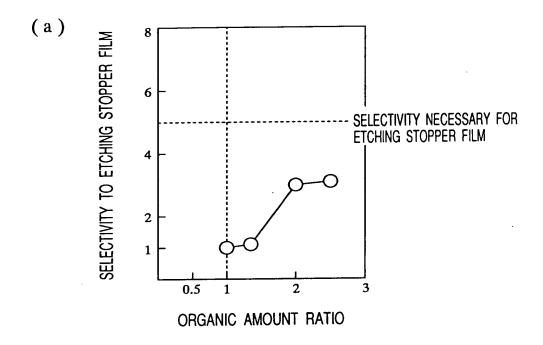


FIG. 103



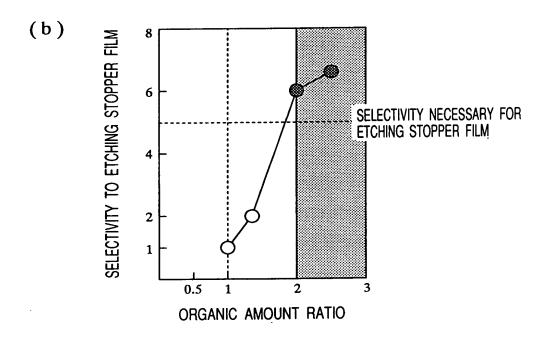
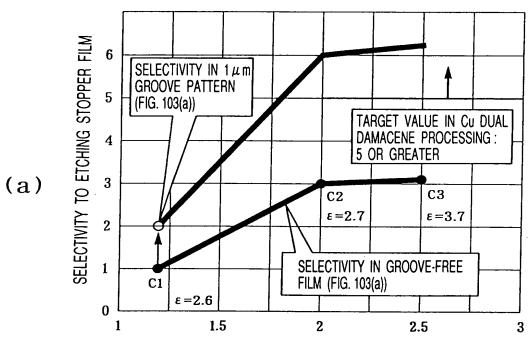


FIG. 104



ORGANIC AMOUNT RATIO (SUPPOSING THAT THE ORGANIC INSULATIG FILM (USED AS AN INTERLEVEL INSULATING FILM) IS 1=20%)

STRUCTURE OF C1 STRUCTURE OF C2, C3

$$CH_3 \qquad CH_3 \qquad CH_3$$

FIG. 105

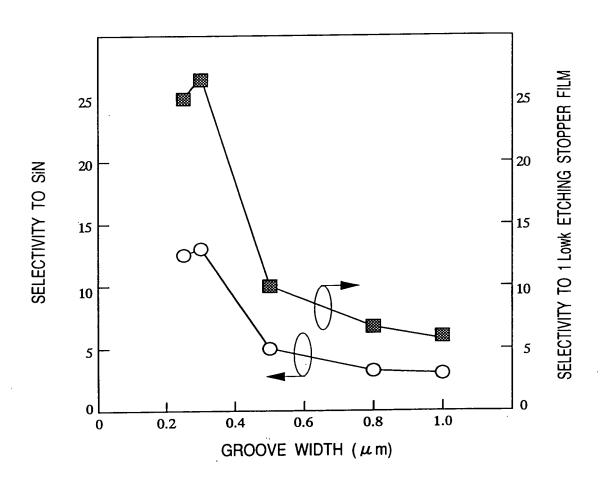
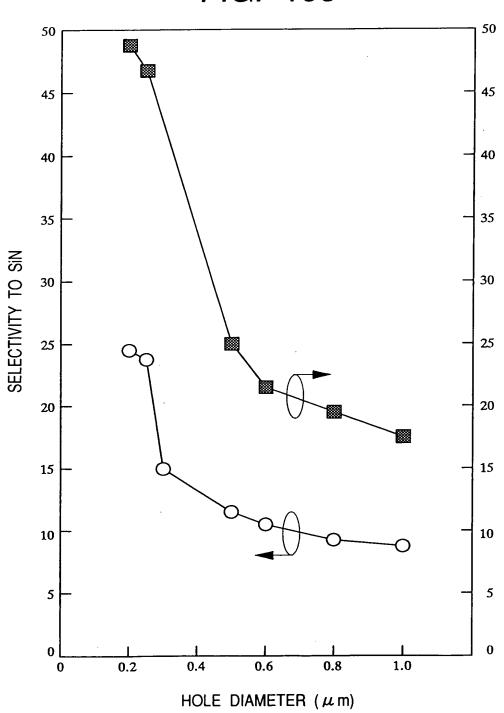


FIG. 106



SELECTIVITY TO ETCHING STOPPER FILM

FIG. 107

	ADHESION	SELECTIVITY (TO ORGANIC SOG)	Cu DIFFUSION- PREVENTIVE LEAK PROPERTY	DIELECTRIC
SiN	0	5~10	0	7.0
PTEOS	0	2~3	×	4.2
Blok	\triangleleft	5~10	◁	5.0
NOVEL ETCHING STOPPER FILM	0	5~10	◁	2.5~4.0

FIG. 108

(a) CF CONSUM-AMOUNT OF CF DEPOSITS **ORGANIC ETCHING AMOUNT** PTION RATE* RATE **DEPOSITS**: SMALL SMALL (LARGE SiO HIGH HIGH CONTENT) **DEPOSITS:** LARGE LARGE (SMALL 1111111111 \$i0 LOW LOW CONTENT)

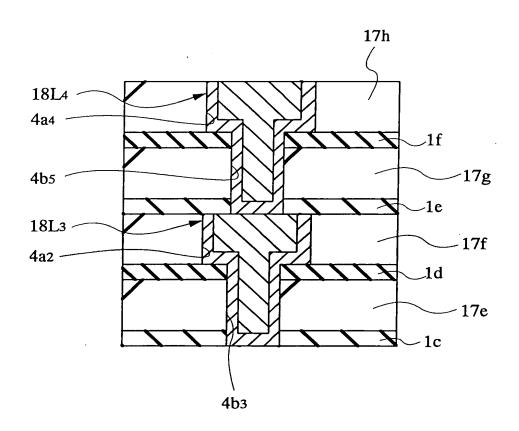
C C C SMALL ORGANIC AMOUNT

O* CO

LOW
ETCHING
RATE

LARGE ORGANIC
AMOUNT

FIG. 109



Smits and a State of

FIG. 110

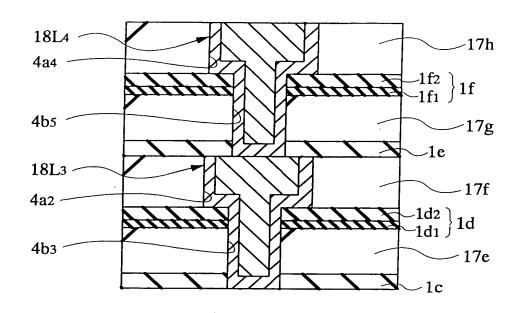


FIG. 111

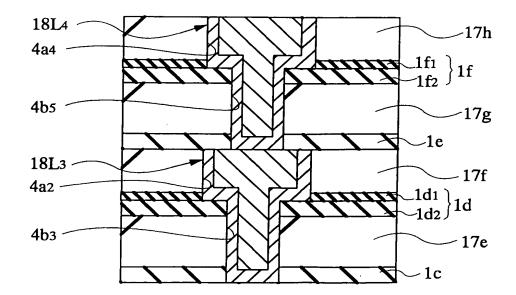


FIG. 112

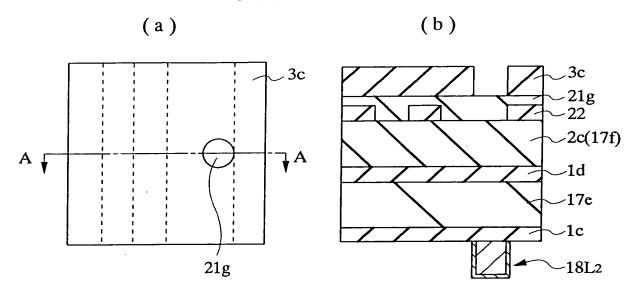
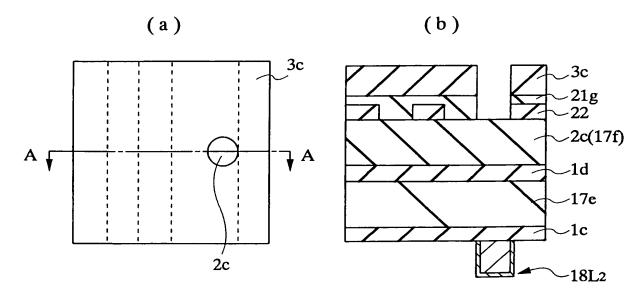


FIG. 113



Market Company

FIG. 114

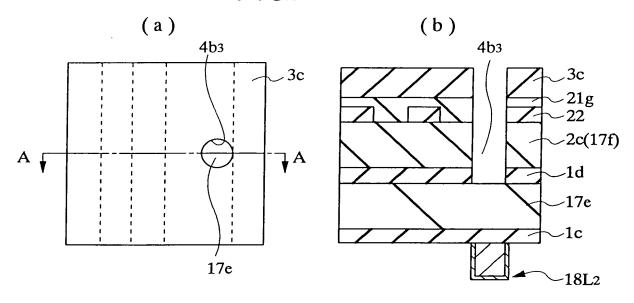


FIG. 115

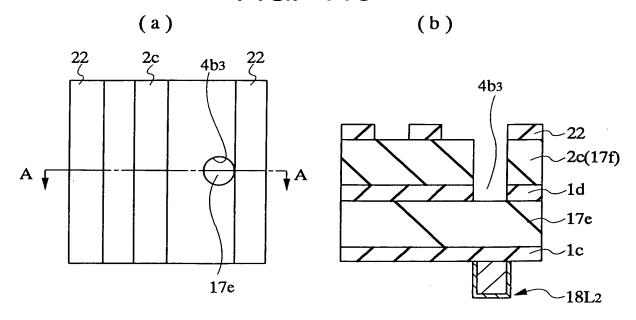


FIG. 116 (a) (b) 22 4b3 4b3 4a2 4a2 2c(17f) A √ -1d -17e 17e -18L2 4a2 4a2

FIG. 117

